

April 30, 2016

Meagan E. Ormand  
Golder Associates Inc.  
2108 W. Laburnum Ave.  
Suite 200  
Richmond, VA 23227

RE: Project: BREMO  
Pace Project No.: 92295608

Dear Meagan Ormand:

Enclosed are the analytical results for sample(s) received by the laboratory on April 28, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

This revision was issued on 4/30/16 to update the Chloride RL, per client request.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Nicole Gasiorowski  
nicole.gasiorowski@pacelabs.com  
Project Manager

Enclosures

cc: Ron DiFrancesco, Golder Associates Inc.  
Mike Williams, Golder Associates Inc



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## CERTIFICATIONS

Project: BREMO  
Pace Project No.: 92295608

---

### Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174  
Alabama Certification #: 41320  
Connecticut Certification #: PH-0216  
Delaware Certification: FL NELAC Reciprocity  
Florida Certification #: E83079  
Georgia Certification #: 955  
Guam Certification: FL NELAC Reciprocity  
Hawaii Certification: FL NELAC Reciprocity  
Illinois Certification #: 200068  
Indiana Certification: FL NELAC Reciprocity  
Kansas Certification #: E-10383  
Louisiana Certification #: FL NELAC Reciprocity  
Louisiana Environmental Certificate #: 05007  
Maryland Certification: #346  
Michigan Certification #: 9911  
Mississippi Certification: FL NELAC Reciprocity  
Missouri Certification #: 236  
Montana Certification #: Cert 0074

Nebraska Certification: NE-OS-28-14  
Nevada Certification: FL NELAC Reciprocity  
New York Certification #: 11608  
North Carolina Environmental Certificate #: 667  
North Carolina Certification #: 12710  
North Dakota Certification #: R-216  
Oklahoma Certification #: D9947  
Pennsylvania Certification #: 68-00547  
Puerto Rico Certification #: FL01264  
South Carolina Certification: #96042001  
Tennessee Certification #: TN02974  
Texas Certification: FL NELAC Reciprocity  
US Virgin Islands Certification: FL NELAC Reciprocity  
Virginia Environmental Certification #: 460165  
Wyoming Certification: FL NELAC Reciprocity  
West Virginia Certification #: 9962C  
Wisconsin Certification #: 399079670  
Wyoming (EPA Region 8): FL NELAC Reciprocity

---

### Charlotte Certification IDs

9800 Kinsey Ave. Ste 100, Huntersville, NC 28078  
North Carolina Drinking Water Certification #: 37706  
North Carolina Field Services Certification #: 5342  
North Carolina Wastewater Certification #: 12

South Carolina Certification #: 99006001  
Florida/NELAP Certification #: E87627  
Kentucky UST Certification #: 84  
Virginia/VELAP Certification #: 460221

---

### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804  
Florida/NELAP Certification #: E87648  
Massachusetts Certification #: M-NC030  
North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40  
South Carolina Certification #: 99030001  
Virginia/VELAP Certification #: 460222

---

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## SAMPLE ANALYTE COUNT

Project: BREMO  
Pace Project No.: 92295608

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92295608001	T2-160428-1220-S3	EPA 1664B	JMS	1	PASI-C
		EPA 200.7	AIS	1	PASI-O
		Trivalent Chromium Calculation	CKJ	1	PASI-O
		EPA 200.8	CKJ	10	PASI-O
		EPA 245.1	SH1	1	PASI-A
		SM 2540D	MJP	1	PASI-A
		EPA 218.6	TK1	1	PASI-O
		EPA 350.1	AES2	1	PASI-A
		SM 4500-CI-E	AES2	1	PASI-A

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## PROJECT NARRATIVE

Project: BREMO  
Pace Project No.: 92295608

---

**Method:** EPA 1664B  
**Description:** HEM, Oil and Grease  
**Client:** Golder\_Dominion\_Bremo  
**Date:** April 30, 2016

**General Information:**

1 sample was analyzed for EPA 1664B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## PROJECT NARRATIVE

Project: BREMO  
Pace Project No.: 92295608

---

**Method:** EPA 200.7  
**Description:** 200.7 MET ICP  
**Client:** Golder\_Dominion\_Bremo  
**Date:** April 30, 2016

**General Information:**

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## PROJECT NARRATIVE

Project: BREMO  
Pace Project No.: 92295608

---

**Method:** Trivalent Chromium Calculation  
**Description:** Trivalent Chromium Calculation  
**Client:** Golder\_Dominion\_Bremo  
**Date:** April 30, 2016

**General Information:**

1 sample was analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## PROJECT NARRATIVE

Project: BREMO  
Pace Project No.: 92295608

---

**Method:** EPA 200.8  
**Description:** 200.8 MET ICPMS  
**Client:** Golder\_Dominion\_Bremo  
**Date:** April 30, 2016

**General Information:**

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## PROJECT NARRATIVE

Project: BREMO  
Pace Project No.: 92295608

---

**Method:** EPA 245.1  
**Description:** 245.1 Mercury  
**Client:** Golder\_Dominion\_Bremo  
**Date:** April 30, 2016

**General Information:**

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## PROJECT NARRATIVE

Project: BREMO  
Pace Project No.: 92295608

---

**Method:** SM 2540D  
**Description:** 2540D TSS, Low-Level  
**Client:** Golder\_Dominion\_Bremo  
**Date:** April 30, 2016

**General Information:**

1 sample was analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## PROJECT NARRATIVE

Project: BREMO  
Pace Project No.: 92295608

---

**Method:** EPA 218.6  
**Description:** Hexavalent Chromium 28 Day  
**Client:** Golder\_Dominion\_Bremo  
**Date:** April 30, 2016

### General Information:

1 sample was analyzed for EPA 218.6. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

QC Batch: WETA/57360

CC: The continuing calibration for this compound is outside of method control limits. The result is estimated.

- T2-160428-1220-S3 (Lab ID: 92295608001)
- Chromium, Hexavalent

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/57360

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92295608001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1557846)
  - Chromium, Hexavalent
- MSD (Lab ID: 1557847)
  - Chromium, Hexavalent

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## PROJECT NARRATIVE

Project: BREMO  
Pace Project No.: 92295608

---

**Method:** EPA 350.1  
**Description:** 350.1 Ammonia  
**Client:** Golder\_Dominion\_Bremo  
**Date:** April 30, 2016

**General Information:**

1 sample was analyzed for EPA 350.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## PROJECT NARRATIVE

Project: BREMO  
Pace Project No.: 92295608

---

**Method:** SM 4500-Cl-E  
**Description:** 4500 Chloride  
**Client:** Golder\_Dominion\_Bremo  
**Date:** April 30, 2016

### General Information:

1 sample was analyzed for SM 4500-Cl-E. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/27419

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92295608001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1722741)
  - Chloride
- MSD (Lab ID: 1722742)
  - Chloride

### Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## ANALYTICAL RESULTS

Project: BREMO  
Pace Project No.: 92295608

Sample: T2-160428-1220-S3		Lab ID: 92295608001		Collected: 04/28/16 12:20		Received: 04/28/16 14:30		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	L. Hamelman				1		04/28/16 12:32		
Collected Date	4/28/16				1		04/28/16 12:32		
Collected Time	12:20				1		04/28/16 12:32		
Field pH	8.2	Std. Units	0.10	1			04/28/16 12:32		
Field Temperature	22.2	deg C	0.50	1			04/28/16 12:32		
HEM, Oil and Grease		Analytical Method: EPA 1664B							
Oil and Grease	ND	mg/L	5.0	1			04/29/16 07:36		
200.7 MET ICP		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tot Hardness asCaCO3 (SM 2340B	107000	ug/L	3300	1		04/29/16 13:33	04/29/16 17:15		
Trivalent Chromium Calculation		Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	ug/L	5.0	1			04/29/16 17:45	16065-83-1	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	ND	ug/L	5.0	1		04/29/16 13:33	04/29/16 17:02	7440-36-0	
Arsenic	10.2	ug/L	5.0	1		04/29/16 13:33	04/29/16 17:02	7440-38-2	
Cadmium	ND	ug/L	1.0	1		04/29/16 13:33	04/29/16 17:02	7440-43-9	
Copper	ND	ug/L	5.0	1		04/29/16 13:33	04/29/16 17:02	7440-50-8	
Lead	ND	ug/L	5.0	1		04/29/16 13:33	04/29/16 17:02	7439-92-1	
Nickel	ND	ug/L	5.0	1		04/29/16 13:33	04/29/16 17:02	7440-02-0	
Selenium	ND	ug/L	5.0	1		04/29/16 13:33	04/29/16 17:02	7782-49-2	
Silver	ND	ug/L	0.40	1		04/29/16 13:33	04/29/16 17:02	7440-22-4	
Thallium	ND	ug/L	1.0	1		04/29/16 13:33	04/29/16 17:02	7440-28-0	
Zinc	ND	ug/L	25.0	1		04/29/16 13:33	04/29/16 17:02	7440-66-6	
245.1 Mercury		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.10	1		04/29/16 11:30	04/29/16 14:26	7439-97-6	
2540D TSS, Low-Level		Analytical Method: SM 2540D							
Total Suspended Solids	2.8	mg/L	1.0	1			04/29/16 10:48		
Hexavalent Chromium 28 Day		Analytical Method: EPA 218.6							
Chromium, Hexavalent	ND	ug/L	5.0	1			04/29/16 12:39	18540-29-9	CC,M1
350.1 Ammonia		Analytical Method: EPA 350.1							
Nitrogen, Ammonia	ND	mg/L	0.20	1			04/29/16 11:57	7664-41-7	
4500 Chloride		Analytical Method: SM 4500-Cl-E							
Chloride	54.5	mg/L	10.0	2			04/29/16 13:20	16887-00-6	M1

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## QUALITY CONTROL DATA

Project: BREMO  
Pace Project No.: 92295608

QC Batch:	GCSV/24834	Analysis Method:	EPA 1664B
QC Batch Method:	EPA 1664B	Analysis Description:	1664 HEM, Oil and Grease
Associated Lab Samples:	92295608001		

METHOD BLANK: 1722347 Matrix: Water  
Associated Lab Samples: 92295608001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Oil and Grease	mg/L	ND	5.0	04/29/16 07:31	

LABORATORY CONTROL SAMPLE: 1722348

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/L	40	37.5	94	78-114	

MATRIX SPIKE SAMPLE: 1722349

Parameter	Units	35241085001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/L	1.2J	40	36.8	89	78-114	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## QUALITY CONTROL DATA

Project: BREMO  
Pace Project No.: 92295608

QC Batch:	MERP/9328	Analysis Method:	EPA 245.1
QC Batch Method:	EPA 245.1	Analysis Description:	245.1 Mercury
Associated Lab Samples:	92295608001		

METHOD BLANK: 1722529 Matrix: Water  
Associated Lab Samples: 92295608001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	04/29/16 14:22	

LABORATORY CONTROL SAMPLE: 1722530

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.4	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1722531 1722532

Parameter	Units	92295608001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits		
Mercury	ug/L	ND	2.5	2.5	2.4	2.4	96	95	70-130	1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## QUALITY CONTROL DATA

Project: BREMO  
Pace Project No.: 92295608

QC Batch:	MPRP/30151	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 MET
Associated Lab Samples:	92295608001		

METHOD BLANK: 1557848 Matrix: Water  
Associated Lab Samples: 92295608001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Tot Hardness asCaCO3 (SM 2340B	ug/L	ND	3300	04/29/16 17:02	

LABORATORY CONTROL SAMPLE: 1557849

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tot Hardness asCaCO3 (SM 2340B	ug/L	82700	86600	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1557850 1557851

Parameter	Units	92295608001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits		
Tot Hardness asCaCO3 (SM 2340B	ug/L	107000	82700	82700	194000	199000	106	112	70-130	3	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## QUALITY CONTROL DATA

Project: BREMO  
Pace Project No.: 92295608

QC Batch:	MPRP/30152	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	92295608001		

METHOD BLANK: 1557840 Matrix: Water  
Associated Lab Samples: 92295608001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	04/29/16 16:57	
Arsenic	ug/L	ND	5.0	04/29/16 16:57	
Cadmium	ug/L	ND	1.0	04/29/16 16:57	
Copper	ug/L	ND	5.0	04/29/16 16:57	
Lead	ug/L	ND	5.0	04/29/16 16:57	
Nickel	ug/L	ND	5.0	04/29/16 16:57	
Selenium	ug/L	ND	5.0	04/29/16 16:57	
Silver	ug/L	ND	0.40	04/29/16 16:57	
Thallium	ug/L	ND	1.0	04/29/16 16:57	
Zinc	ug/L	ND	25.0	04/29/16 16:57	

LABORATORY CONTROL SAMPLE: 1557841

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	48.6	97	85-115	
Arsenic	ug/L	50	49.6	99	85-115	
Cadmium	ug/L	5	4.9	97	85-115	
Copper	ug/L	50	49.5	99	85-115	
Lead	ug/L	50	49.4	99	85-115	
Nickel	ug/L	50	49.1	98	85-115	
Selenium	ug/L	50	51.3	103	85-115	
Silver	ug/L	5	4.8	95	85-115	
Thallium	ug/L	50	49.9	100	85-115	
Zinc	ug/L	250	256	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1557842 1557843

Parameter	Units	92295608001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Antimony	ug/L	ND	250	250	260	263	103	105	70-130	1	
Arsenic	ug/L	10.2	250	250	252	254	97	98	70-130	1	
Cadmium	ug/L	ND	25	25	25.2	25.6	101	102	70-130	2	
Copper	ug/L	ND	250	250	236	240	94	96	70-130	1	
Lead	ug/L	ND	250	250	256	259	102	104	70-130	1	
Nickel	ug/L	ND	250	250	238	240	95	96	70-130	1	
Selenium	ug/L	ND	250	250	241	245	96	98	70-130	1	
Silver	ug/L	ND	25	25	24.7	25.0	99	100	70-130	1	
Thallium	ug/L	ND	250	250	247	252	99	101	70-130	2	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## QUALITY CONTROL DATA

Project: BREMO  
Pace Project No.: 92295608

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1557842 1557843											
Parameter	Units	92295608001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Zinc	ug/L	ND	1250	1250	1210	1220	96	97	70-130	1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## QUALITY CONTROL DATA

Project: BREMO  
Pace Project No.: 92295608

QC Batch:	WET/44582	Analysis Method:	SM 2540D
QC Batch Method:	SM 2540D	Analysis Description:	2540D Total Suspended Solids
Associated Lab Samples:	92295608001		

METHOD BLANK: 1722635 Matrix: Water  
Associated Lab Samples: 92295608001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	1.0	04/29/16 10:48	

LABORATORY CONTROL SAMPLE: 1722636

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	250	242	97	90-110	

SAMPLE DUPLICATE: 1722637

Parameter	Units	92295608001 Result	Dup Result	RPD	Qualifiers
Total Suspended Solids	mg/L	2.8	2.8	0	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## QUALITY CONTROL DATA

Project: BREMO  
Pace Project No.: 92295608

QC Batch:	WETA/57360	Analysis Method:	EPA 218.6
QC Batch Method:	EPA 218.6	Analysis Description:	Chromium, Hexavalent by IC 28 Day
Associated Lab Samples:	92295608001		

METHOD BLANK: 1557844 Matrix: Water  
Associated Lab Samples: 92295608001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	ug/L	ND	5.0	04/29/16 13:18	

LABORATORY CONTROL SAMPLE: 1557845

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	ug/L	.075	.071J	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1557846 1557847

Parameter	Units	92295608001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits		
Chromium, Hexavalent	ug/L	ND	.075	.075	.093J	.098J	124	130	90-110	5	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## QUALITY CONTROL DATA

Project: BREMO  
Pace Project No.: 92295608

QC Batch:	WETA/27411	Analysis Method:	EPA 350.1
QC Batch Method:	EPA 350.1	Analysis Description:	350.1 Ammonia
Associated Lab Samples:	92295608001		

METHOD BLANK: 1722446 Matrix: Water  
Associated Lab Samples: 92295608001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.20	04/29/16 11:54	

LABORATORY CONTROL SAMPLE: 1722447

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1722448 1722449

Parameter	92295608001		MS	MSD	MS		MSD		% Rec	RPD	Qual
	Units	Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec			
Nitrogen, Ammonia	mg/L	ND	5	5	5.0	5.0	100	100	90-110	1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## QUALITY CONTROL DATA

Project: BREMO  
Pace Project No.: 92295608

QC Batch:	WETA/27419	Analysis Method:	SM 4500-Cl-E
QC Batch Method:	SM 4500-Cl-E	Analysis Description:	4500 Chloride
Associated Lab Samples:	92295608001		

METHOD BLANK: 1722739 Matrix: Water  
Associated Lab Samples: 92295608001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	5.0	04/29/16 13:16	

LABORATORY CONTROL SAMPLE: 1722740

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1722741 1722742

Parameter	92295608001		MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
	Units	Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits		
Chloride	mg/L	54.5	20	20	70.8	70.6	81	80	90-110	0	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## QUALIFIERS

Project: BREMO  
Pace Project No.: 92295608

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-A Pace Analytical Services - Asheville  
PASI-C Pace Analytical Services - Charlotte  
PASI-O Pace Analytical Services - Ormond Beach

### ANALYTE QUALIFIERS

CC The continuing calibration for this compound is outside of method control limits. The result is estimated.  
M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..


## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BREMO  
Pace Project No.: 92295608

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92295608001	T2-160428-1220-S3		FLD/		
92295608001	T2-160428-1220-S3	EPA 1664B	GCSV/24834		
92295608001	T2-160428-1220-S3	EPA 200.7	MPRP/30151	EPA 200.7	ICP/18006
92295608001	T2-160428-1220-S3	Trivalent Chromium Calculation	ICP/18009		
92295608001	T2-160428-1220-S3	EPA 200.8	MPRP/30152	EPA 200.8	ICPM/12199
92295608001	T2-160428-1220-S3	EPA 245.1	MERP/9328	EPA 245.1	MERC/8961
92295608001	T2-160428-1220-S3	SM 2540D	WET/44582		
92295608001	T2-160428-1220-S3	EPA 218.6	WETA/57360		
92295608001	T2-160428-1220-S3	EPA 350.1	WETA/27411		
92295608001	T2-160428-1220-S3	SM 4500-CI-E	WETA/27419		

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

	Document Name: <b>Sample Condition Upon Receipt(SCUR)</b>	Document Revised: 26FEB2016 Page 1 of 2
	Document No.: <b>F-MEC-CS-009-rev.02</b>	Issuing Authority: Pace Mechanicsville Quality Office



Client Name:

Golder / Bremono

Project #:

**WO# : 92295608**


Courier:

☐ Commercial

☐ Fed Ex

☐ Pace

☐ UPS

☐ USPS

☐ Other:

☒ Client

Custody Seal Present?

☐ Yes

☒ No

Seals Intact?

☐ Yes

☐ No

Packing Material:

☐ Bubble Wrap

☒ Bubble Bags

☐ None

☐ Other:

Thermometer:

☒ RMD001

☐

Type of Ice:

☒ Wet

☐ Blue

☐ None

☒ Samples on ice, cooling process has begun

Correction Factor: 0.0°C

Cooler Temp Corrected (°C):

4.1

Biological Tissue Frozen?

☐ Yes

☐ No

☐ N/A

Temp should be above freezing to 6°C

USDA Regulated Soil ( ☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

			COMMENTS:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.	
Rush Turn Around Time Requested?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.	<u>1 Day VAT</u>
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.	
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.	
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.	Note if sediment is visible in the dissolved container
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.	
-Includes Date/Time/ID/Analysis Matrix: <u>WW</u>			
All containers needing acid/base preservation have been checked?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.	
All containers needing preservation are found to be in compliance with EPA recommendation?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)			
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Samples checked for dechlorination	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.	
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.	
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.	
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased):			

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted:

Date/Time:

Comments/Resolution:

Project Manager SCURF Review:

UMG

Date:

4/28/16

Project Manager SRF Review:

UMG

Date:

4/28/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

## Section A

Required Client Information:

Company: Goldier Associates  
Address: 2608 W. Lehigh Avenue, Ste. 200  
Richmond, VA 23227  
Email To: Wendy@Goldier.com  
Phone: 804-531-0129 Fax: 804-538-2900  
Requested Due Date/AT: 24-Mar-08

## Section B

Required Project Information:

Report To: Wendy@Goldier.com  
Copy To: Wendy@Goldier.com  
Purchase Order No.: Bureau  
Project Name: Bureau  
Project Number: 152-0347.200

## Section C

Invoice Information:

Attention: Heidi Payable  
Company Name: Goldier Associates  
Address: 2608 W. Lehigh Avenue, Ste. 200  
Richmond, VA 23227  
Pace Quote Reference: 152-0347.200  
Pace Project Manager: Wendy  
Pace Profile #: 152-0347.200

## REGULATORY AGENCY

NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐  
UST ☐ RCRA ☐ OTHER ☐  
Site Location STATE: VA

Page: 1 of 1  
**2033242**  
00015680

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	COLLECTED	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	T2-160428-1220-SS	DIW WT WW P SL OL WP AR TS OT	4/23/16	1430	4/23/16	1220	Unpreserved H <sub>2</sub> SO <sub>4</sub> HNO <sub>3</sub> HCl NaOH Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Methanol Other	X X X X X X X X	X	92295608 001
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
ADDITIONAL COMMENTS										
RELINQUISHED BY / AFFILIATION										
DATE										
TIME										
ACCEPTED BY / AFFILIATION										
DATE										
TIME										
SAMPLE CONDITIONS										
Temp in °C										
Received on Ice (Y/N)										
Custody Sealed Cooler (Y/N)										
Samples Intact (Y/N)										

ORIGINAL

SAMPLER NAME AND SIGNATURE  
PRINT Name of SAMPLER: Lucas Havelman  
SIGNATURE of SAMPLER: [Signature]  
DATE Signed (MM/DD/YY): 04/28/16